

I CLAIM:

1. A stepped etalon comprising:

a body which is transparent at least in a predetermined range of wavelengths and

having first and second opposing sides;

the first side having a surface;

the second side having a plurality of steps, each step having a land substantially

parallel to the surface,

the lands of adjacent steps being separated by a non-abrupt transition region.

2. A stepped etalon comprising:

a body which is transparent at least in a predetermined range of wavelengths and

having first and second opposing sides;

the first side having a surface;

the second side having a plurality of steps, each step having a land substantially

parallel to the surface,

the lands of adjacent steps being separated by a transition region;

a coating substantially transparent to light having a wavelength within said

predetermined range applied over said steps and transition regions;

wherein said coating smooths the transition region between lands of adjacent

steps.

1                    3.        The stepped etalon of claim 2, wherein:  
-2                    the body has a predetermined index of refraction;  
3                    said coating having an index of refraction substantially equal to said  
4                    predetermined index of refraction.

1                    4.        A stepped etalon comprising:  
2                    a body which is transparent at least in a first range of wavelengths and having first  
3                    and second opposing sides;  
4                    the first side having a surface;  
5                    the second side having a plurality of steps, each step having a land substantially  
6                    parallel to the surface,  
7                    the lands of adjacent steps being separated by a transition region;  
8                    the body having a light-absorbing dopant implanted in said transition regions, said  
9                    dopant absorbing light having a wavelength within said predetermined range.

1                    5.        The etalon of claim 4, wherein said dopant comprises erbium.

1                    6.        A method of producing a stepped etalon having softened step transitions  
2                    comprising the steps of:  
3                    providing an etalon body which is transparent at least in a first range of  
4                    wavelengths and having first and second opposing sides;

5                    depositing a masking material over a first portion of said first side while leaving a  
6                    second portion of said first side exposed;  
7                    applying a directional abrasive etching beam to said first side at an angle less than  
8                    ninety degrees relative to said first side for a predetermined amount of time; and  
9                    removing said masking material.

1                    7.        A method of producing a stepped etalon having softened step transitions  
2                    comprising the steps of:

3                    providing an etalon body which is transparent at least in a first range of  
4                    wavelengths and having first and second opposing sides;

5                    depositing an erodible masking material of a predetermined thickness over a first  
6                    portion of said first side while leaving a second portion of said first side exposed, the first and  
7                    second portions being separated by a transition region, the masking material having a tail region  
8                    of gradually decreasing thickness over the transition region;

9                    etching said first side and erodible masking material for a predetermined amount  
10                    of time; and

11                    removing any remaining masking material from the first side.

1                    8.        The method of claim 7, wherein the step of depositing comprises the steps  
2                    of:

3                    depositing said masking material over the first portion while leaving said  
4                    transition region and said second portion exposed; and

5 reflowing said masking material a sufficient degree for the masking material to  
-6 flow over said transition region.

1 9. The method of claim 7, wherein the step of depositing comprises the steps  
2 of:  
3 depositing said masking material over the first portion in a solid layer having said  
4 predetermined thickness; and  
5 depositing said masking material over the transition region using grey scale  
6 techniques to provide an average masking density which drops to zero across the transition  
7 region from the first portion to the second portion.

1 10. The method of claim 9, further comprising the steps of reflowing the  
2 masking material on the transition region.

1 11. A method of producing a stepped etalon having softened step transitions  
2 comprising the steps of:  
3 providing an etalon body which is transparent at least in a first range of  
4 wavelengths and having first and second opposing sides, said first side having a plurality of  
5 steps, adjacent steps separated by a generally abrupt transition region; and  
6 further processing the etalon body to soften the abrupt nature of the transition  
7 region.

1                    12.    The method of claim 11, wherein the step of further processing comprises  
2    the step of chemically etching the first side of the etalon.

1                    13.    The method of claim 11, wherein the step of further processing comprises  
2    the step of applying to the first side of the etalon a coating which is substantially transparent to  
3    light having a wavelength within said predetermined range.

1                    14.    The method of claim 13, wherein said etalon body has a predetermined  
2    index of refraction and said coating has an index of refraction substantially equal to said  
3    predetermined index of refraction.

1                    15.    The method of claim 11, wherein the step of further processing comprises  
2    the step of selectively annealing at least the transition regions between said steps.

1                    16.    A method of producing an etalon having a step transition with a reduced  
2    degree of unwanted interference comprising the steps of:

3                    providing an etalon body which is transparent at least in a first range of  
4    wavelengths and having first and second opposing sides, said first side having a plurality of  
5    steps, adjacent steps separated by a generally abrupt transition region;

6                    masking the steps on the first side of the etalon body while leaving the transition  
7    region substantially exposed; and

8                   doping the exposed transition region with a light-absorbing dopant, said dopant  
-9   absorbing light having a wavelength within said predetermined range.

1                   17.    The method of claim 16, wherein the step of doping comprises the step of  
2   doping the exposed transition region with erbium.